regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A semiconductor device comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region formed in said semiconductor layer, said region containing one ore more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more,

wherein said region is formed in the vicinity of a boundary region between said channel region and one of said source region and said drain region.

79. (Amended) A device according to claim 78 wherein said semiconductor device has transistors [are] selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

80. (Amended) A device according to claim 78 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

81.(Amended) A device according to claim 78 wherein said semiconductor [film] layer comprises crystalline silicon.

I4

82. (Amended) A device according to claim 78 wherein said semiconductor [film] layer comprises amorphous silicon.

I5

83. (Amended) A device according to clam 78 wherein [said portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] a concentration of said element in said channel region is lower than that of said element in said region.

I6 I3 I2

84. (Amended) [An active matrix type display device having a plurality of pixels and a peripheral circuit, wherein said peripheral circuit comprises a CMOS device comprising n-channel and p-channel TFTs, each of said n-channel and p-channel TFTs comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein said channel region has at least a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A semiconductor device comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region having a higher energy band gap than any of said source, drain, and channel regions,

wherein said region is formed in the vicinity of a boundary region between said

channel region and one of said source region and said drain region.

85. (Amended) A device according to claim 84 wherein said semiconductor device has transistors [are] selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

86. (Amended) A device according to claim 84 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

87. (Amended) A device according to claim 84 wherein said semiconductor [film] layer comprises crystalline silicon.

88. (Amended) A device according to claim 84 wherein said semiconductor [film] layer comprises amorphous silicon.

89. (Amended) A device according to clam 84 wherein said [portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] region includes one ore more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1×10^{19} atoms/cm^3 or more.

90. (Amended) [An active matrix type display device having a plurality of pixels and a peripheral circuit, wherein said peripheral circuit comprises a CMOS device comprising n-channel and p-channel TFTs, each of said n-channel and p-channel TFTs comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more, and

wherein said channel region contains boron at a concentration of from 1 x 10^{15} to 5 x 10^{17} atoms/cm^3]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, said driver circuit comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region formed in said semiconductor layer, said region containing one ore more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more,

wherein said region is formed in the vicinity of a boundary region between said channel region and one of said source region and said drain region.

91. (Amended) A device according to claim 90 wherein said display device has transistors [are] selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

92. (Amended) A device according to claim 90 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

93. (Amended) A device according to claim 90 wherein said semiconductor [film] layer comprises crystalline silicon.

94. (Amended) A device according to claim 90 wherein [absolute value of a threshold voltage of said n-channel TFT is approximately equivalent to that of p-channel TFTs] said driver circuit has at least a CMOS circuit comprising a pair of an n-channel TFT and a p-channel TFT.

95. (Amended) A device according to clam 90 wherein [said portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] a concentration of said element in said channel region is lower than that of said element in said region.

96. (Amended) [An active matrix type display device having a plurality of pixels and a peripheral circuit, wherein said peripheral circuit comprises a CMOS device comprising n-channel and p-channel TFTs, each of said n-channel and p-channel TFTs comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein said channel region has at least a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more, and

wherein said channel region contains boron at a concentration of from 1 x 10^{15} to 5 x 10^{17} atoms/cm^3]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, said driver circuit comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region having a higher energy band gap than any of said source, drain, and channel regions,

wherein said region is formed in the vicinity of a boundary region between said channel region and one of said source region and said drain region.

97. (Amended) A device according to claim 96 wherein said display device has transistors [are] selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

98. (Amended) A device according to claim 96 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

99. (Amended) A device according to claim 96 wherein said semiconductor [film] layer comprises crystalline silicon.

100. (Amended) A device according to claim 96 wherein [absolute value of a threshold voltage of said n-channel TFT is approximately equivalent to that of p-channel TFTs] said driver circuit has at least a CMOS circuit comprising a pair of an n-channel TFT and a p-channel TFT.

101. (Amended) A device according to clam 96 wherein said [portion is located adjacent to a boundary between the source and the channel regions or a boundary between

I20 Cnd

the drain and the channel regions] region containing one ore more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more.

I21 pt

102. (Amended) [An active matrix type display device having a plurality of pixels and a peripheral circuit, wherein said peripheral circuit comprises a CMOS device comprising n-channel and p-channel TFTs, each of said n-channel and p-channel TFTs comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode under said channel region with a gate insulating film interposed therebetween,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, said driver circuit comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including carbon at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1 x 10^{19} atoms/cm^3 or more.

I22

103. (Amended) A device according to claim 102 wherein said semiconductor [film] layer comprises amorphous silicon.

104. (Amended) A device according to claim 102 [further comprising:

a first interlayer insulating film over said semiconductor film and said gate electrode, said first interlayer insulating film comprising inorganic material; and

a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin,

wherein said active matrix type display device is a transparent type or a reflective type device] wherein said driver circuit has at least a CMOS circuit comprising a pair of an n-channel TFT and a p-channel TFT.

106. (Amended) A device according to claim 102 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

107. (Amended) A device according to claim 102 wherein said semiconductor [film] layer comprises crystalline silicon.

108. (Amended) A device according to claim [102] 104 wherein absolute value of a threshold voltage of said n-channel TFT is approximately equivalent to that of p-channel TFT[s].

109. (Amended) A device according to claim 102 wherein said [portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] display device has transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

110. (Amended) [An active matrix type display device having a plurality of pixels and

a peripheral circuit, wherein said peripheral circuit comprises a CMOS device comprising n-channel and p-channel TFTs, each of said n-channel and p-channel TFTs comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein said channel region has at least two portions containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, said driver circuit comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including nitrogen at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1 x 10^{19} atoms/cm^3 or more.

112. (Amended) A device according to claim 110 [further comprising:

a first interlayer insulating film over said semiconductor film and said gate electrode, said first interlayer insulating film comprising inorganic material; a

a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin,

wherein said active matrix type display device is a transparent type or a reflective type device] wherein said driver circuit has at least a CMOS circuit comprising a pair of an n-channel TFT and a p-channel TFT.

I26

113. (Amended) A device according to claim 110 wherein said semiconductor [film] layer comprises crystalline silicon.

I27

114. (Amended) A device according to claim 110 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

115. (Amended) A device according to claim 110 wherein said semiconductor [film] layer comprises amorphous silicon.

I28

116. (Amended) A device according to claim [110] 112 wherein absolute value of a threshold voltage of said n-channel TFT is approximately equivalent to that of p-channel TFTs.

I29 I30

117. (Amended) A device according to claim 110 wherein [each of said portions is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] said display device has transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

118. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, said driver circuit comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including oxygen at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1 x 10^{19} atoms/cm^3 or more.

120. (Amended) A device according to claim 118 [further comprising:

a first interlayer insulating film over said semiconductor film and said gate electrode, said first interlayer insulating film comprising inorganic material;

a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin; and

a pixel electrode on said second interlayer insulating film,

wherein said active matrix type display device is a transparent type or a reflective type device] wherein said driver circuit has at least a CMOS circuit comprising a pair of an n-channel TFT and a p-channel TFT.

121. (Amended) A device according to claim 118 wherein said [active matrix type] display device comprises transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

122. (Amended) A device according to claim 118 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

123. (Amended) A device according to claim 118 wherein said semiconductor [film] layer comprises crystalline silicon.

124. (Amended) A device according to claim 118 wherein said semiconductor [film] layer comprises amorphous silicon.

125. (Amended) A device according to claim 118 wherein [said portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] a concentration of said element in said channel region is lower than that of said element in said region.

126. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween,

wherein said channel region has at least two portions containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1×10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, each of said pixels comprising:

a semiconductor layer including a channel region and source and drain regions

with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region formed in said semiconductor layer, said region containing one ore more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1×10^{19} atoms/cm^3 or more,

wherein said region is formed in the vicinity of a boundary region between said channel region and one of said source region and said drain region.

128. (Amended) A device according to claim 126 further comprising:

a first interlayer insulating film over said semiconductor [film] layer and said gate electrode, said first interlayer insulating film comprising inorganic material;

a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin; and

a pixel electrode on said second interlayer insulating film[,

wherein said active matrix type display device is a transparent type or a reflective type device].

130. (Amended) A device according to claim 126 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

131. (Amended) A device according to claim 126 wherein said semiconductor [film] layer comprises crystalline silicon.

132. (Amended) A device according to claim 126 wherein said semiconductor [film] layer comprises amorphous silicon.

133. (Amended) A device according to claim 126 wherein [each of said portions is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] a concentration of said element in said channel region is lower than that of said element in said region.

134. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a pixel electrode connected to said semiconductor film,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1×10^{19} atoms/cm^3 or more, and

wherein said channel region contains boron at a concentration of from 1×10^{15} to 5×10^{17} atoms/cm^3]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, each of said pixels comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a region having a higher energy band gap than any of said source, drain, and channel regions,

wherein said region is formed in the vicinity of a boundary region between said channel region and one of said source region and said drain region.

135. (Amended) A device according to claim 134 wherein said [active matrix type] display device comprises transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

136. (Amended) A device according to claim 134 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

137. (Amended) A device according to claim 134 wherein said semiconductor [film] layer comprises crystalline silicon.

139. (Amended) A device according to claim 134 [wherein said portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] further comprising a first interlayer insulating film over said semiconductor layer and said gate electrode, said first interlayer insulating film comprising inorganic material; a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin; and a pixel electrode on said second interlayer insulating film.

140. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween; and

a pixel electrode connected to said semiconductor film,

wherein said channel region has a portion containing one or more elements

selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more, and

wherein said channel region contains boron at a concentration of from 1 x 10^{15} to 5 x 10^{17} atoms/cm^3]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, each of said pixels comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed ~~therebetween; and~~

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including carbon at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1 x 10^{19} atoms/cm^3 or more.

141. (Amended) A device according to claim 140 wherein said [semiconductor active matrix type] display device comprises transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

142. (Amended) A device according to claim 140 wherein said semiconductor [film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

143. (Amended) A device according to claim 140 wherein said semiconductor [film] layer comprises crystalline silicon.

145. (Amended) A device according to claim 140 [wherein said portion is located adjacent to a boundary between the source and the channel regions or a boundary between

the drain and the channel regions] further comprising a first interlayer insulating film over said semiconductor layer and said gate electrode, said first interlayer insulating film comprising inorganic material; a second interlayer insulating film on said first interlayer insulating film, said second interlayer insulating film comprising organic resin; and a pixel electrode on said second interlayer insulating film.

146. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode under said channel region with a gate insulating film interposed therebetween; and

a pixel electrode connected to said semiconductor film,

wherein each of the source and the drain regions has a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1×10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, each of said pixels comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween; and

a gate electrode adjacent to said channel region with a gate insulating film interposed therebetween;

wherein said semiconductor layer has at least one region including nitrogen at least one boundary region in the vicinity of at least one of a source-channel boundary and a drain-channel boundary at concentration of 1×10^{19} atoms/cm^3 or more.

148. (Amended) A device according to claim 146 wherein said semiconductor

[film] layer comprises one selected from the group consisting of silicon, germanium, and gallium arsenide.

149. (Amended) A device according to claim 146 wherein said [non-single crystalline] semiconductor layer comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

151. (Amended) A device according to claim 146 wherein said [portion is located adjacent to a boundary between the source and the channel regions or a boundary between the drain and the channel regions] display device has transistors selected from the group consisting of stagger type, inverted stagger type, planar type, and inverted planar type transistors.

152. (Amended) [An active matrix type display device having a plurality of pixels, each pixel comprising:

a semiconductor film comprising at least a channel region and source and drain regions with said channel region interposed therebetween;

a gate electrode under said channel region with a gate insulating film interposed therebetween; and

a pixel electrode connected to said semiconductor film,

wherein said channel region has at least a portion containing one or more elements selected from the group consisting of carbon, nitrogen, and oxygen at a concentration of 1 x 10^{19} atoms/cm^3 or more]

A display device having a plurality of pixels and at least one driver circuit for driving said pixels, each of said pixels comprising:

a semiconductor layer including a channel region and source and drain regions with said channel region interposed therebetween; and